

### **REMARKS**

This amendment is responsive to the Final Office Action of September 29, 2009. Reconsideration and allowance of **claims 1-10, 12, 13, 15-19, 21-27, 30, 32-40, 42, 43, 46-49, 52-55, 57, 58, 61-64, 66, 67, and 70-74** are requested.

### **The Office Action**

**Claims 1-7, 9, 10, 12-19, 32-38, 40, 42-48, 66, 67, 69, and 70** stand rejected under 35 U.S.C. § 103(a) over Taylor (U.S. Patent No. 5,950,629) in view of Niemeyer (U.S. Patent No. 6,424,885).

**Claims 8 and 39** stand rejected under 35 U.S.C. § 103 over Taylor in view of Niemeyer and in further view of Sumanaweera (U.S. Patent No. 6,443,894).

**Claims 21-24, 25-27, 30, 31, 49, 50, 52-58, 61-64, 68, 71, and 72** stand rejected under 35 U.S.C. § 103(a) over Taylor in view of Niemeyer and in further view of Wodicka (U.S. Patent No. 5,445,144).

### **Background**

Taylor is directed to a system that includes a manipulator for positioning a surgical instrument rather than directly holding and moving the instruments by hand. In particular, Taylor discloses a first manipulator comprising a coarse motion manipulator and a fine motion manipulator and a second manipulator is connected to a distal end of the first manipulator. The system comprises means for manipulating the position of a surgical instrument, means for sensing the position of the surgical instrument, means for determining a path from a sensed position of the surgical instrument to the target position, and means for audibly signaling deviation of the position of the surgical instrument from the path.

Niemeyer is directed to telesurgery systems where the surgeon uses some form of remote control to manipulate surgical instrument movements rather than directly holding and moving the instruments by hand. In particular, Niemeyer is directed to systems where a surgeon enters input at a master control input device to thereby cause a corresponding movement to occur at a slave device that includes an end effector. The system of Niemeyer defines and updates a coordinate transformation

mapping between the master control workspace and the end effector workspace so as to retain coordination between movement of the master control manipulated by the surgeon and the responsive output movement of the end effector.

**The Claims Distinguish Patentably  
Over the References of Record**

**Claim 1** calls for tracking a position of a manually manipulatable tool mechanically coupled to a haptic device as a surgeon manually manipulates the tool. Taylor discloses a system for manipulating movement of a surgical instrument. More specifically, Taylor discloses using a manipulator to position and move the surgical instrument. Taylor neither discloses nor suggests wherein the tool is coupled to the haptic device, much less an interactive haptic device where the surgeon can grasp and move the haptic device in order to properly position and move the tool. Neimeyer fails to cure these shortcomings of Taylor and was not cited as doing so. Moreover, Neimeyer discloses where a surgeon enters input at a master control input device to cause a corresponding movement to occur at a slave device that includes an end effector such as a robotic arm to move and position a surgical instrument. Accordingly, it is submitted that claim 1 and claims 10, 12, 13, and 16-19 dependent therefrom distinguish patentably and unobviously over the references of record.

Moreover, the dependent claims set forth numerous details which are neither shown by Taylor nor addressed by the Examiner. The applicant reserves the right to address these additional limitations on a claim by claim basis in future amendments or an appeal, as may be appropriate.

Claim 2 has been amended to focus on the embodiments of FIGS 6A-C. It is submitted that neither Taylor nor Neimeyer teach or fairly suggest removing tissue from a curved anatomical object while maintaining sharp edges. Accordingly, it is submitted that claim 2 and claims 3-9 dependent therefrom distinguish patentably and unobviously over the references of record.

Claim 15 calls for tracking a position of a tool which is physically manipulatable by a surgeon and is coupled to a haptic device. Taylor and Neimeyer neither disclose nor suggest allowing the surgeon to physically manipulate the position of the tool by coupling the tool to the haptic device.

Claim 21 calls for tracking a current position of a tool mechanically coupled to a haptic device as the tool moves relative to a virtual guide surface. Neither Taylor nor Niemeyer disclose nor suggest mechanically coupling the tool to the haptic device.

Claim 32 calls for a surgical tool coupled to a haptic device. Taylor and Niemeyer do not teach or fairly suggest coupling the surgical tool to the haptic device.

Claim 52 calls for tracking position changes of a moveable medical tool of a haptic device, wherein the medical tool is coupled to the haptic device allowing a surgeon to grasp and physically interact with the medical tool. Neither Taylor nor Neimeyer disclose nor suggest allowing the surgeon to physically interact with the medical tool by coupling the tool to the haptic device. Accordingly, it is submitted that claim 52 and claims 53-55, 57, 58 and 61-63 dependent therefrom distinguish patentably and unobviously over the references of record.

Claims 53-55, 57, 58 and 61-63 set forth additional details. The applicant reserves the right to further argue these additional details in further Office Actions or on an Appeal, as may be appropriate.

Claim 66 calls for determining a current position of a surgical tool which is coupled to a haptic device used in performing a surgical procedure. It is submitted that neither Taylor nor Neimeyer teach or fairly suggest coupling a surgical tool to a haptic device. Accordingly, it is submitted that claim 66 and claims 67 and 70-72 dependent therefrom distinguish patentably over the references of record.

Dependent claims 67, 70-72 and 74 set forth additional details. The applicant reserves the right to further argue these additional details in further Office Actions or on an Appeal, as may be appropriate.

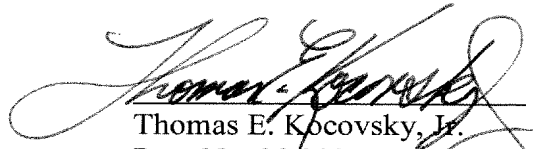
**CONCLUSION**

For the reasons set forth above, it is submitted that **claims 1-10, 12, 13, 15-19, 21-27, 30, 32-40, 42, 43, 46-49, 52-55, 57, 58, 61-64, 66, 67, and 70-74** distinguish patentably over the references of record and meet all statutory requirements. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is requested to telephone Thomas Kocovsky at 216.363.9000.

Respectfully submitted,

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